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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,097	08/20/2003	Kirill Sokolov	1293.1808	4964
21171	7590	10/06/2004	EXAMINER	
STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			BLACKMAN, ROCHELLE ANN J	
			ART UNIT	PAPER NUMBER
			2851	

DATE MAILED: 10/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/644,097

Applicant(s)

SOKOLOV, KIRILL

Examiner

Rochelle Blackman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 August 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 20-24, 26-38 and 40-43 is/are rejected.
- 7) ☐ Claim(s) 10-19, 25, 39 and 44 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 08/20/03
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 11 and 15 in FIGS. 2 and 7. Corrected drawing sheets, or amendment to the specification to add the reference character(s) in the description, are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The abstract of the disclosure is objected to because on line 1, "have" should be - -having- -. Correction is required. See MPEP § 608.01(b).

Claim Objections

Claim 43 is objected to because of the following informalities: the claim recites the limitation "the image forming system" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 42 and 43 are rejected under 35 U.S.C. 102(b) as being anticipated by Mitsutake et al. (U.S. Patent No. 5,566,367).

Mitsutake discloses an apparatus (FIG. 12) comprising: an illumination system (71, 72) to emit white light having light of a predetermined wavelength band; a plurality of prisms (21₁ - 21₃), each coated with a cholesteric liquid crystal film (see 24₁ and 24₂ and col. 5, lines 47-53), to convert the light of the predetermined wavelength band to a first polarization component; and a color recycling system (77R,G, B and 81-83) to separate the light of the predetermined wavelength band into a first color light and a second color light, transmit and reflect the first and second color lights, to convert a third color light to have a second polarization component, and transmit the third color light so that a fourth color light, that is a mixture of the first and third color lights, and a fifth color light, that is a mixture of the second and third color lights, progress in different optical

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paths; further comprising a screen (see col. 13, lines 19-22) to receive the first through third color lights modulated by the image forming system (76R,G,B) and projected thereon (see function of 78) and display an image without losing the white light emitted from the light source.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3, 24, 26-29, 31-35, 40, and 41 are rejected under 35 U.S.C. 102(e) as being anticipated by Berman et al. (U.S. Patent Publication No. 2003/0151833).

Berman discloses a projection apparatus (FIG. 1) comprising: an illumination system (see 205 or see Light Source in FIG. 67) to emit white light having light of a predetermined wavelength band; a polarization conversion system (210), to convert the light of the predetermined wavelength band to a first polarization component; a color recycling system (212, 214, 216) to separate the light of the predetermined wavelength band into a first color light (see BS – blue light in Fig. 29) and a second color light (see GS – green light in Fig. 29), transmit and reflect the first and second color lights, to convert a third color light (RP) to have a second polarization component (p – polarized light), and transmit the third color light so that a fourth color light (magenta light), that is a mixture of the first and third color lights, and a fifth color light (yellow light), that is a

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mixture of the second and third color lights, progress in different optical paths; an image forming system (230, 232, 234 or blue, green, red microdisplay in Fig. 29) comprising a first reflective panel (Blue micro display) and a second reflective panel (Green microdisplay), which respectively modulate the first and second color lights according to an applied image signal, and a third reflective panel (Red microdisplay), which modulates the third color light according to the applied image signal; a screen (see 170, of Fig. 2, not shown in Fig. 29, but considered to be located in the direction of OUTPUT in Fig. 29) to receive the first through third color lights modulated by the image forming system and projected thereon and display an image; an optical path conversion system (see Blue/Green ColorSelect and Green/Blue ColorSelect in Fig. 29), to split the optical paths of the fourth and fifth color lights incident from the color recycling system such that the first color light (blue) in the fourth color light is directed to the first reflective panel, the second color light (green) in the fifth color light is directed to the second reflective panel, and the third color light (red) in the fourth and fifth color light is directed to the third reflective panel, and direct the first through third color lights reflected from the respective first through third reflective panels to the screen (see RP, BS, and GS going in the direction of OUTPUT in Fig. 29); and a projection system (see FIG. 67) comprising a projection lens (Projection lens in FIG. 67), which projects the fourth color light output from the optical path conversion system and the fifth color light output from the optical path conversion system on the screen; wherein the illumination system comprises: a light source (see Light source and reflector in FIG. 1 and Light Source in FIG. 67), which emits the white light; and a fly-eye lens integrator, which separates the

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white light emitted from the light source into sub beams (see condenser 15 in FIG. 1, condense in FIG. 67 and pg. 1, paragraph [0010]); wherein the illumination system further comprises an ultraviolet filter on an optical path between the light source and the fly-eye lens integrator in order to block ultraviolet light in the white light (also see condenser 15 in FIG. 1, condense in FIG. 67 and pg. 1, paragraph [0010]); wherein the first and second reflective panels are parallel with each other, and the third reflective panel is orthogonal to the first and second reflective panels (see arrangement of 230, 232, and 234); wherein each of the first through third reflective panels comprises a $\lambda/4$ phase plate on an incident surface thereof (see pg. 10, paragraph [0125]); wherein the optical path conversion system comprises a polarizing beamsplitter having a transmissive/reflective surface (see 212, 214, 216), to reflect the first color light in the fourth color light incident from the color recycling system to the first reflective panel, reflect the second color light in the fifth color light to the second reflective panel, transmit the first and second color lights modulated by the respective first and second reflective panels to the projection system, transmit the third color light in the fourth and fifth color lights incident from the color recycling system to the third reflective panel, and reflect the third color light modulated by the third reflective panel; further comprising a wideband filter (see 215) to convert the first polarization component of the third color light output from the optical path conversion system into the second polarization component, on an optical path between the optical path conversion system and the projection system; wherein the first color light is blue light (see BS in Fig. 29) and the second color light is green light (see GS in Fig. 29); wherein the third color light is red

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light (also see RP in Fig. 29); wherein the fourth color light is cyan light (see cyan dichroic in Fig. 29) and the fifth color light is yellow light (see combination of GS and RP in Fig. 29); wherein the first polarization component is an S polarization component and the second polarization component is a P polarization component (see WS and WP of Figs. 29); wherein the light source comprises: a metal halogen lamp; and a parabolic reflector to collimate the white light (see Light source and reflector in FIG. 1 and Light Source in FIG. 67); further comprising a clean-up polarizer, which removes a parasitic polarization, on an optical path between the wideband filter and the projection system (see pg. 10, paragraph [0120]); wherein the third color light is red light (see RP in Fig. 29), the fourth color light is cyan light (see cyan dichroic in Fig. 29), and the fifth color light is yellow light (see combination of GS and RP in Fig. 29); wherein the screen removes a region in which the yellow and magenta lights do not progress (see OUTPUT containing only blue, green, and red components in Fig. 29).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4-9, 20-23, 26-28, 30-38, 40, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (U.S. Patent No. 6,536,902) in view of Berman et al. (U.S. Patent Publication No. 2003/0151833).

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Lee discloses a projection apparatus (FIGS. 6-13) comprising: an illumination system (36, 38) to emit white light having light of a predetermined wavelength band; a polarization conversion system (50), to convert the light of the predetermined wavelength band to a first polarization component; a color recycling system (60) to separate the light of the predetermined wavelength band into a first color light and a second color light, transmit and reflect the first and second color lights, to convert a third color light to have a second polarization component, and transmit the third color light so that a fourth color light, that is a mixture of the first and third color lights, and a fifth color light, that is a mixture of the second and third color lights, progress in different optical paths; an image forming system (56, 57) comprising a first reflective panel (56) and a second reflective panel (57), which respectively modulate the first and second color lights according to an applied image signal; a screen to receive the first through third color lights modulated by the image forming system and projected thereon and display an image; an optical path conversion system (54), to split the optical paths of the fourth and fifth color lights incident from the color recycling system such that the first color light in the fourth color light is directed to the first reflective panel, the second color light in the fifth color light is directed to the second reflective panel, and the third color light in the fourth and fifth color light is directed to the third reflective panel, and direct the first through third color lights reflected from the respective first through third reflective panels to the screen; and a projection system (58) comprising a projection lens, which projects the fourth color light output from the optical path conversion system and the fifth color

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light output from the optical path conversion system on the screen (see col. 6, lines 13-54).

Lee does not appear to disclose a third reflective panel.

Berman discloses light management system (LMS) 200 comprising green microdisplay 230, red microdisplay 232, blue microdisplay 234 for modulating green, red and blue light (see FIG. 2)

It would have been obvious to one of ordinary skill in the art at the time invention was made to provide the optical conversion system of the Lee reference with a third reflective panel or display, as taught by Berman in order to provide separate modulation for each color light, thus optimizing the optical conversion system.

Allowable Subject Matter

1. Claims 10-19, 25, 39, and 44 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
2. Claims 10-19 have been found to be allowable because the prior art of record either alone or in combination neither discloses nor makes obvious the projection apparatus comprising the feature of "a roof mirror, to reflect light incident from the color switching filter back to the color switching filter" in combination with the other particular combination of features recited in claims 1 and 10.

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3. Claim 25 has been found to be allowable because the prior art of record either alone or in combination neither discloses nor makes obvious the projection apparatus comprising the feature of "a shadow zone, in which no pixels exist, is formed between the first and second reflective panels and at a center of the third reflective panel" in combination with the other particular combination of features recited in claim 1.

4. Claim 39 has been found to be allowable because the prior art of either alone or in combination neither discloses nor makes obvious the projection apparatus comprising the feature of "a length of the first and second reflective panels is half a length of the third panel" in combination with the other particular combination of features recited in claim 1.

5. Claim 44 has been found to be allowable because the prior art of record either alone or in combination neither discloses nor makes obvious the projection apparatus comprising the feature of "a screen to receive yellow and magenta lights from a plurality of reflective panels and to combine the yellow and magenta lights into a unified image" in combination with the feature of "the reflective panels forming a shadow zone formed therebetween in which the yellow and magenta lights are not reflected".

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rochelle Blackman whose telephone number is (571) 272-2113. The examiner can normally be reached on M-F 8:00-4:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571) 272-2258. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RB


JUDY NGUYEN
PRIMARY EXAMINER